Global alignment Mutr + Muid zerofield

Alignment with Millepede

Catherine Silvestre

CEA Saclay

August 25, 2006

Outline

Update

Simulations
- Reco1
- Reco2

Real data
- Reco1: aligning run3pp zerofield with survey
- Reco2

Conclusion

Outline

Update

Simulations
- Reco1
- Reco2

Real data
- Reco1: aligning run3pp zerofield with survey
- Reco2

Conclusion

Update

Bugs fixed in the MuID alignment

- output file:
  writting the correction output files, x corrections were written instead of y and vice versa (alignment/Misalignment.cxx).
- loading corrections:
  there was a reset missing when loading corrections so that when changing run numbers, corrections were added on top of the previously modified geometry (muigeom/TMuiAlign.h)

Outline

Update

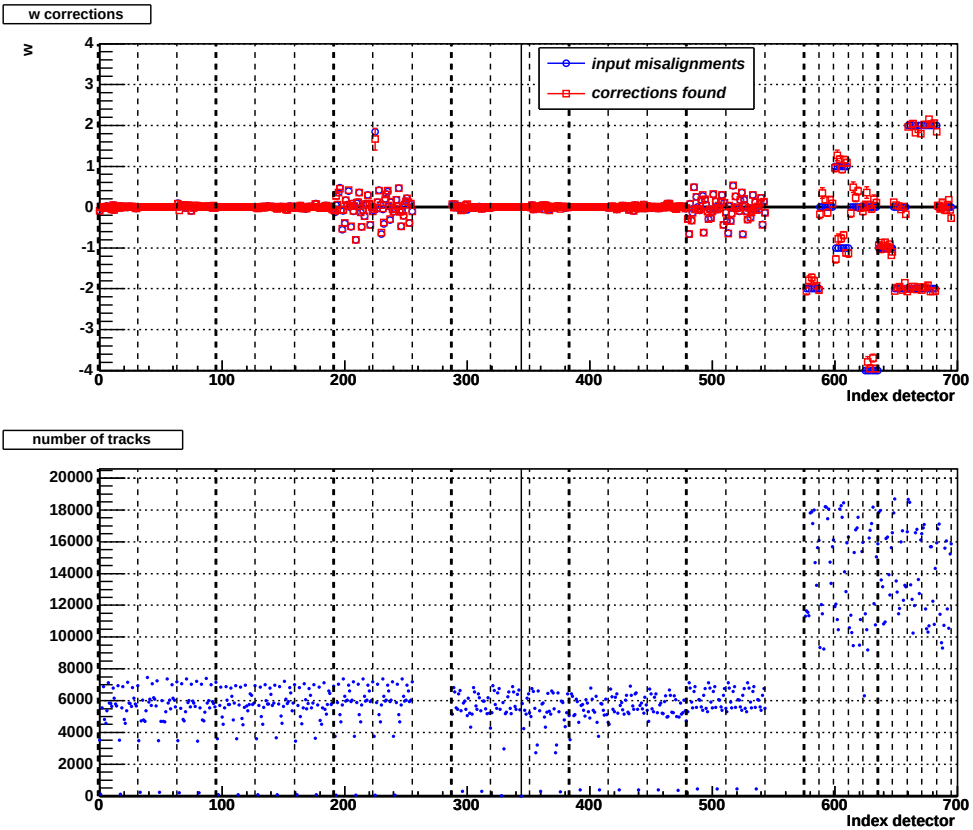
Simulations
- Reco1
- Reco2

Real data
- Reco1: aligning run3pp zerofield with survey
- Reco2

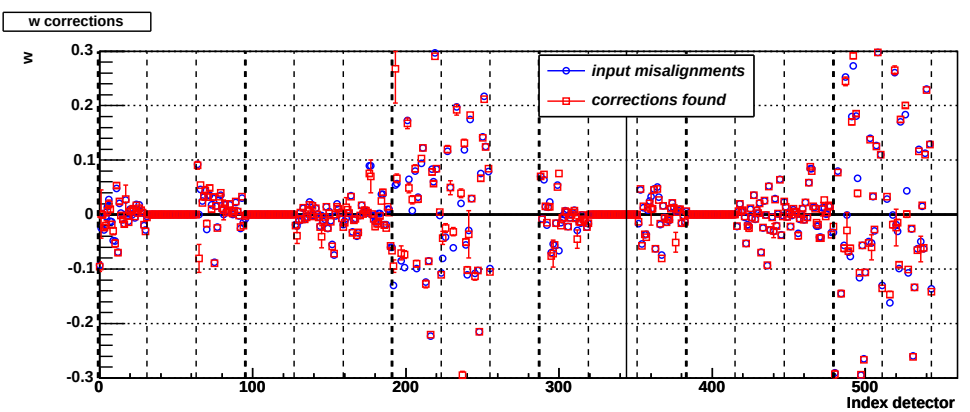
Conclusion

Reco1: founding misalignments

MuTr and MuID



Zoom on the Mutr (ordinate changed; MuTr only)



Plot description

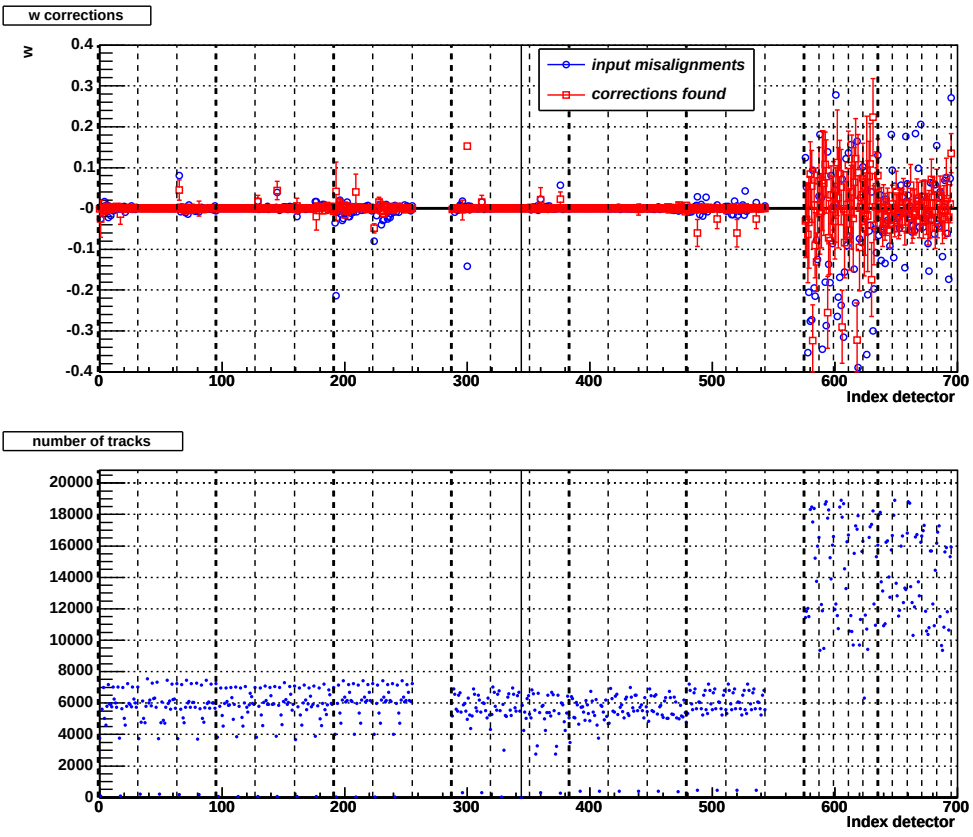
- The top and bottom plots show w offsets in cm vs each detector (one point per half octant and panel). Middle plot is the number of tracks per detector.
- In blue are the input misalignments; in red the misalignments found by Millepede. The dashed lines separate the cathodes and planes. The black straight line show the detectors which have less than 5 tracks (poor statistics).

Comments

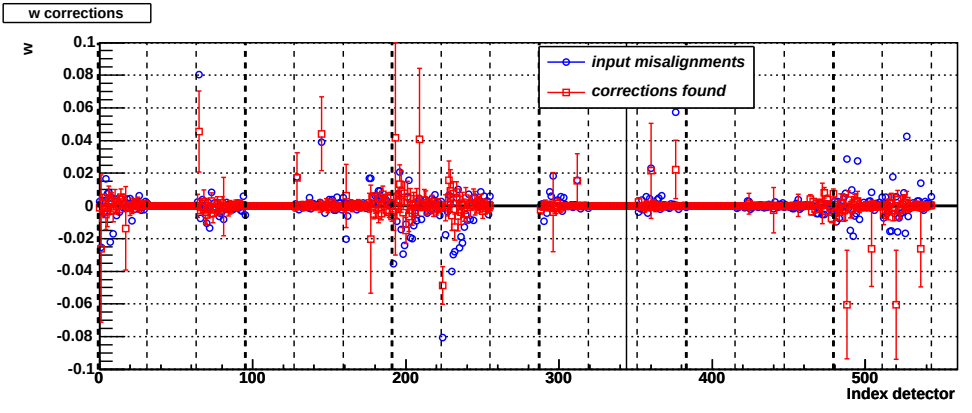
- For both MuTr and MuID, Millepede found the input misalignments within error bars.

Reco2: introducing corrections to align the data

MuTr and MuID



Zoom on the Mutr (ordinate changed; MuTr only)



Plot description

- The top and bottom plots show w offsets in cm vs each detector (one point per half octant and panel). Middle plot is the number of tracks per detector.
- In blue are the input misalignments = input misalignments same as in reco1 + corrections found by Millepede in reco1; in red the misalignments found by Millepede. The dashed lines separate the cathodes and planes. The black straight line show the detectors which have less than 5 tracks.

Comments

- Millepede corrected the detector alignment since every offset is now centered on 0 within error bars.
- **The alignment is working on MC for MuTr + MuID.**

Outline

Update

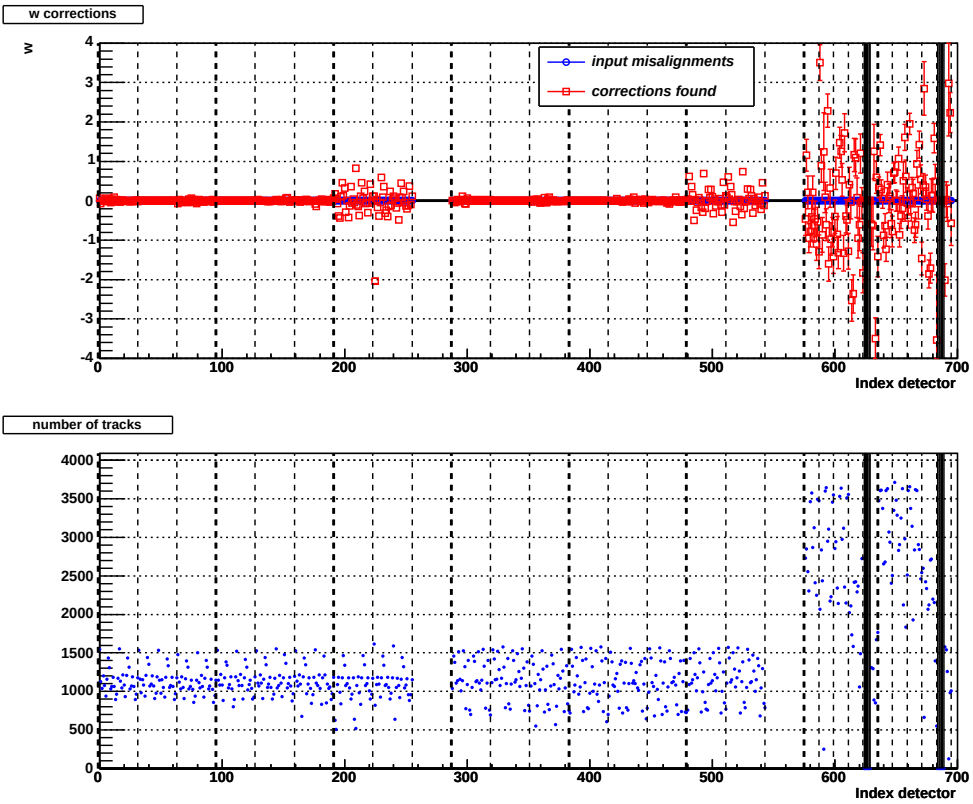
Simulations
- Reco1
- Reco2

Real data
- Reco1: aligning run3pp zerofield with survey
- Reco2

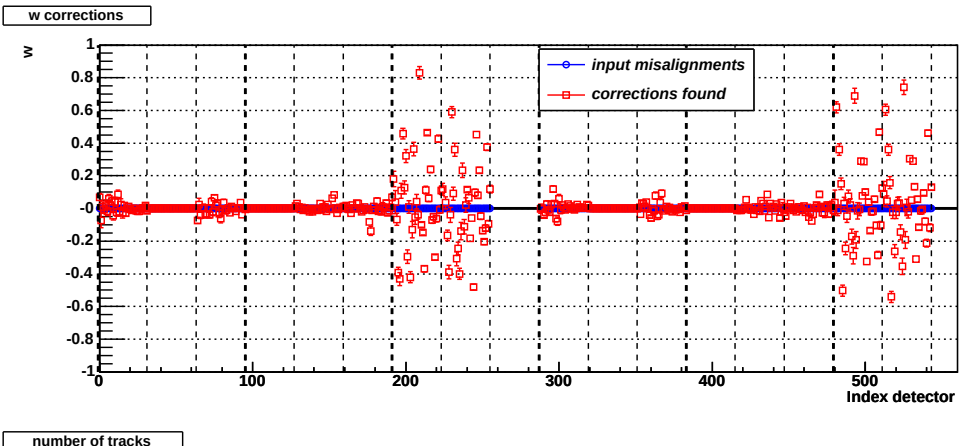
Conclusion

Reco1: founding misalignments

MuTr and MuID



Zoom on the Mutr (ordinate changed; MuTr only)



Plot description

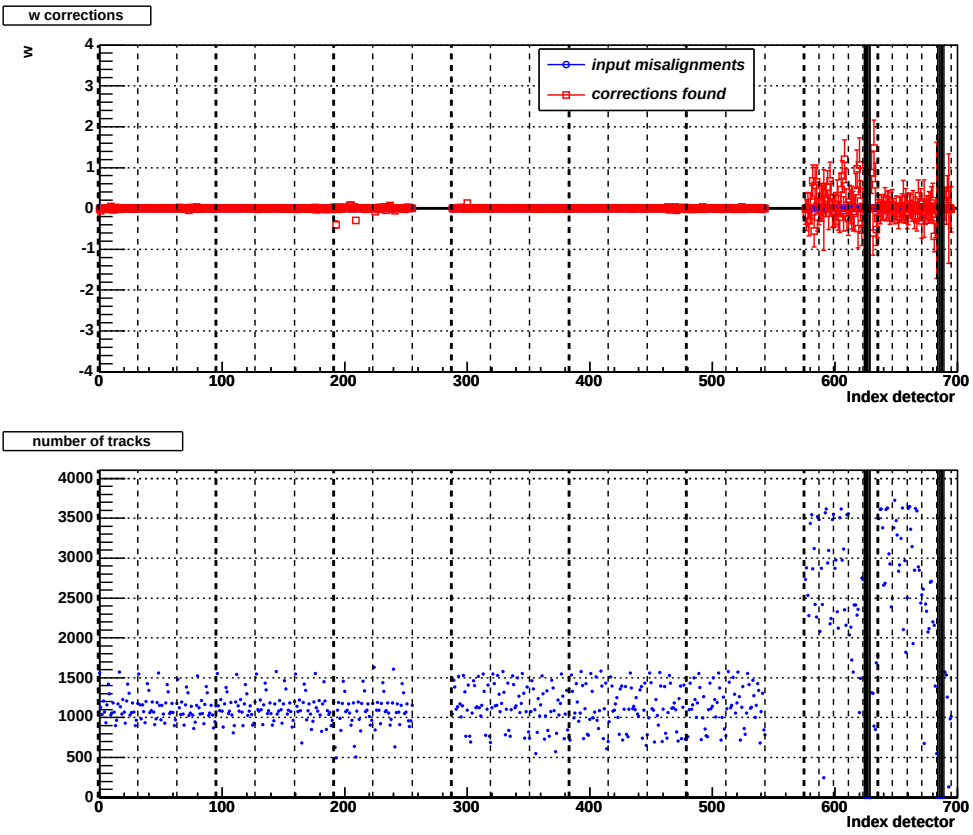
- The top and bottom plots show w offsets in cm vs each detector (one point per half octant and panel). Middle plot is the number of tracks per detector.
- In blue are the input misalignments; in red the misalignments found by Millepede. The dashed lines separate the cathodes and planes. The black straight line show the detectors which have less than 5 tracks: the reconstructed dst have no clusters in plane 4, panel 0, 1, 2.

Comments

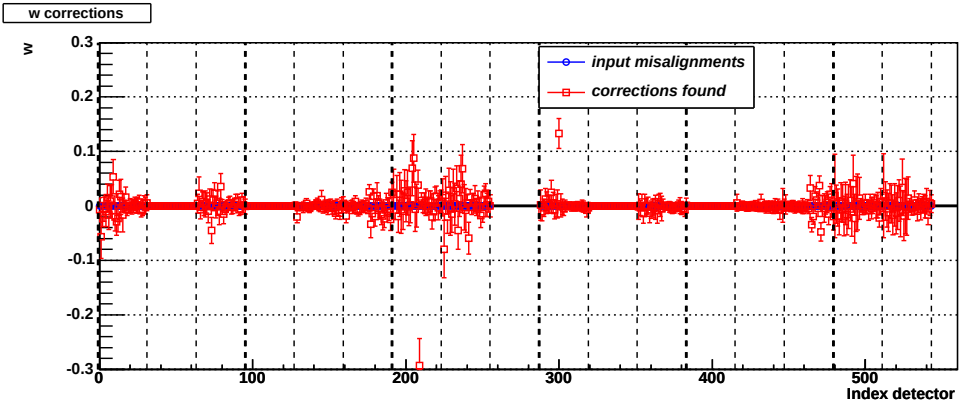
- The misalignments are especially seen in the last stations.

Reco2: introducing corrections

MuTr and MuID



Zoom on the Mutr (ordinate changed; MuTr only)



Plot description

- The top and bottom plots show w offsets in cm vs each detector (one point per half octant and panel). Middle plot is the number of tracks per detector.
- In blue are the input misalignments = input misalignments same as in reco1 + corrections found by Millepede in reco1; in red the misalignments found by Millepede. The dashed lines separate the cathodes and planes. The black straight line show the detectors which have less than 5 tracks.

Comments

- Millepede corrected the detector alignment since every offset is now centered on 0 within error bars.
- **The alignment is working on RD for MuTr + MuID.**

Outline

Update

Simulations
- Reco1
- Reco2

Real data
- Reco1: aligning run3pp zerofield with survey
- Reco2

Conclusion

Conclusion

Conclusion

- The global alignment is working for the mutr and muid together without magnetic field.

To do

- Show the residuals in each panel for completeness.
- Look at a repass with the mutr muid alignment from Millepede $\rightarrow$ if the alignment is better and time allows, this file may be the one to commit in the DB.
- Write a technical note on the global alignment.